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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/811,604

03/29/2004

Pierattilio Di Gregorio

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570

7590

08/23/2006

AKIN GUMP STRAUSS HAUER & FELD L.L.P.
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2005 MARKET STREET, SUITE 2200
PHILADELPHIA, PA 19103

EXAMINER

BUTLER, PATRICK

ART UNIT

PAPER NUMBER

1732

DATE MAILED: 08/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/811,604	GREGORIO, PIERATTILIO DI	
	Examiner	Art Unit	
	Patrick Butler	1732	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8, 12 and 13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 12 and 13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 07 August 2006 has been entered.

Response to Amendment

The Applicant's Amendments and Accompanying Remarks, filed 07 August 2006, have been entered and have been carefully considered. No Claims are new, Claim 1 is amended, no claims is/are canceled, and Claims 1-8, 12, and 13 are pending.

Despite these advances, the invention as currently claimed is not found to be patentable for reasons herein below.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4, 7, 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Benson et al (5,107,649) in view of Hunter (5,792,539), Späth (6,189,354) and the applicant's own admission (specification, page 1, paragraph 0005).

With regard to claim 1, Benson et al disclose a known procedure for producing a planar thermo-insulating vacuum panel (evacuating the panel) (column 4, line 40-52) comprising an envelope (having two facing barrier sheets sealed at their edges) (figure 15, number 82) and containing at least one filler selected from the group consisting of inorganic powders (discontinuous filling material) and porous organic foams (porous filling material) (column 16, lines 25-29). Benson et al further disclose that the panel can be curved into a cylinder (column 9, lines 22-26 and Figure 18).

Benson et al disclose using at least one filler selected from the group consisting of inorganic powders and porous organic foams (column 16, lines 25-29), but do not expressly disclose that the powders and foams are included inside the vacuum envelope. Hunter teaches a bendable vacuum panel (evacuating the panel) (column 8, lines 57-67), which contains at least one filler selected from the group consisting of inorganic powders and porous organic foams (column 9, lines 21-29). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to include a powder or foam as taught by Hunter in the panel taught by Benson et al. The motivation to do so would have been to increase the R-value. The R-value would be increased by the including of powder or foam because foam has multiple gas pockets trapping air, and Hunter recognized that stationary air inhibits heat transfer in (see col. 6, lines 40-43). Thus, the filling material would fill the envelope formed by the facing

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sheets, and as the filling material is between the sheets, it would space the facing sheets at least to the extent that the sheets were separated.

Benson et al do not disclose the method by which the panel is curved, but do disclose that the panel may comprise metal sheets, (see column 4, line 8-17) and that the sheets may be bent (column 6, lines 48-54). Attention is drawn to Späth, which discloses a method for curving hollow metal sheets (column 1, lines 6-8) through calendaring by using two rollers and a third element (a roller) of equal length placed parallel to the two rollers, (see Figure 1). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to curve the panels taught by Benson et al using the method taught by Späth. The motivation to do so would have been to produce a curved hollow metal sheet so that the hollow section is protected against bulges, nicks or against any other kind of deformation (Späth, column 1, lines 15-18).

Benson et al do not expressly disclose that the vacuum panel comprises at least one metal sheet having a thickness not greater than 100 μm . Applicant's admission discloses that envelopes made of barrier sheets of thickness generally not greater than 100 μm are known in the art (specification, page 1, paragraph 005). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to assemble and curve a vacuum panel as taught by Benson et al in view of Späth et al having a barrier sheet of less than 100 μm thickness. The motivation to do so would have been to create a high-performance insulation material occupying less volume that is therefore more valuable (Benson et al, column 12, lines 12-14).

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With regard to claim 2, Späth teaches the calendaring operation is carried out by passing the planar vacuum panel between at least two rollers and a third element of length equal at least to a length of the two rollers and having a position parallel to the two rollers (Figure 1, number 27).

With regard to claim 3, Späth teaches the third element is a third roller (Figure 1, number 27).

With regard to claim 4, Benson et al teach the thickness of the vacuum panel may be 2.5 mm thick (column 11, lines 49-55), which is less than the claimed 20 mm. Hunter teaches that the filling material may be rigid polyurethane foam (column 9, line 24),

With regard to claim 7, Späth also discloses a method for curving metal panels through calendaring by using two rollers and a third element of equal length placed parallel to the two rollers where the position of the third element (a roller) is continuously modified during the calendaring operation, (column 8, lines 62-67).

With regard to claim 12, Benson et al teach that the vacuum panel contains at least one getter material (column 4, lines 51-52).

With regard to claim 13, the applicant's specification teaches that it is known to produce a vacuum panel using a multilayer barrier sheet having at least one metal layer (specification, paragraph 0005). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to form the vacuum panel taught by Benson et al using a barrier sheet which is a multilayer sheet having at least one metal

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layer. The motivation to do so would have been to confer a barrier effect and mechanical support and protection of the barrier layer (specification, paragraph 0005).

Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Benson et al (5,107,649) in view of Hunter (5,792,539), Späth (6,189,354), the applicant's own admission (specification, page 1, paragraph 0005) and Nishimoto (6,336,693).

With regard to claim 5, the teachings of Benson et al in view of Hunter, Späth, and the applicant's own admission teach the invention of claim 4 as discussed above but do not expressly teach the vacuum panel is between 5 and 20 mm. Nishimoto discloses that it is known to construct vacuum panels using hard polyurethane foam having a thickness in a range of 10 to 20 mm (see column 3, lines 47-58). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to increase the thickness of the panel taught by Benson et al in view of Hunter, Späth, and the applicant's own admission to between 5 and 20 mm as taught by Nishimoto. The motivation to do so would have been to increase the insulating properties of the panel.

With regard to claim 6, Benson et al in view of Hunter, Späth, and the applicant's own admission teach the invention of claim 1 as discussed above and that the filler may be silica powder (column 9, lines 26-28) but do not expressly teach the vacuum panel is between 5 and 20 mm. Nishimoto discloses that it is known to construct vacuum panels having a thickness in a range of 10 to 20 mm (see column 3, lines 47-58). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to increase the thickness of the panel taught by Benson et al in view of Hunter, Späth, and

the applicant's own admission to between 5 and 20 mm as taught by Nishimoto. The motivation to do so would have been to increase the insulating properties of the panel.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Benson et al (5,107,649) in view of Hunter (5,792,539), Späth (6,189,354), the applicant's own admission (specification, page 1, paragraph 0005), and Haase (4,011,357).

With regard to claim 8, Benson et al in view of Hunter, Späth, and the applicant's own admission teach the invention of claim 1 as discussed above. Furthermore, Benson et al also teach that spacer beads coated with a polystyrene or similar adhesive material are to be affixed to the wall sheets of the planar vacuum panel, (column 7, lines 9-14), thus necessarily creating at least a layer of polymeric adhesive on at least one face of the panel. Benson teaches that the panel is subsequently bent, (column 7, lines 2-8). Benson et al does not expressly teach that the polystyrene layer is in a foam state. Haase discloses that polystyrene can be foamed (column 2, lines 47-56). Therefore, it can be reasoned that foamed polystyrene would be a similar adhesive material to polystyrene as disclosed by Benson. Furthermore, Benson recognizes that polystyrene has desirable insulating properties (column 7, lines 34-40) and the use of foamed polystyrene as adhesive would enhance the insulating properties of the vacuum panel as a whole. Therefore, it would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made to have placed adhesive polymeric foam on at least one face of a vacuum panel and to have curved the panel through calendaring for the reasons discussed above.

Response to Arguments

The affidavit under 37 CFR 1.132 filed 07 August 2006 is insufficient to overcome the rejections of claims 1-8, 12, and 13 based upon the 35 U.S.C. 103(a) rejections as set forth in the last Office action.

The affidavit under 37 CFR 1.132 filed 07 August 2006 refer(s) only to the system described in the above referenced application and not to the individual claims of the application. Thus, there is no showing that the objective evidence of nonobviousness is commensurate in scope with the claims. See MPEP § 716.

Indications of the affidavit under 37 CFR 1.132 filed 07 August 2006 appear to be on the grounds that:

1) Regarding the Combination of Benson with Hunter:

a) Benson excludes the presence inside his vacuum envelopes of fillers of fine particles.

b) The motivation to increase R-value significantly is not found in the reference to stacking sine-like wave corrugated sheets.

2) Within the Examiner's R-value Assumptions:

a) Stating Hunter's recognitions of stationary air inhibiting heat transfer and concluding that air trapped in the foam or powder would increase the R-value would provide motivation to incorporation powder or foam is contrary to the teachings of Hunter and knowledge of a person of at least ordinary skill in the art. Thus, Hunter requires evacuation.

b) Given complete evacuation, the conduction contribution of the filling would increase the R-value of Benson.

3) Regarding Bending of Metal Sheets:

a) The glass or ceramic spacer beads of Benson would likely break in bending.

b) Benson's thickness requirement is due to preventing the sheet from forming around the spherical spacers yet requiring it still be bendable. Thus, the sheet would fail below the minimum thickness.

4) Regarding Bendability of Hunter Panels:

a) Portions of both embodiments Hunter are relied upon, yet only one bends or is bendable.

b) Upon using flexible foam, the foam would compress to the point of failure.

4) Regarding Späth:

a) Bending foam breaks the foam.

b) Späth is only applicable to hollow profiles.

c) Späth's profiles would be above the claimed wall thickness. Thus, the inside material would support the claimed panel rather than rely essentially on the integrity of the outer layer.

The indications of the affidavit are addressed as follows:

1a) Appropriate weight is given to the opinion evidence. However, no factual evidence has been made of record showing the foam to generate powders.

Moreover, given that foam or powder may be used, having simply the foam would not cause the problems associated with powder.

Moreover, even in the presence of powder, not meeting the threshold of having perfectly leak-free welds maintaining very high-grade vacuums for many years does not diminish the various utilities of less than high-grade vacuums over many years or high-grade vacuums over several years.

1b) The additional motivation found in Hunter regarding prevention of air flow to reduce convection has been clarified in the rejection cited above.

2a) The assertions do not provide clarity of the contradiction to the teachings of Hunter. Further, it is not clear how it follows that Hunter requires evacuation.

Moreover, absent unattainable complete evacuation, air remains in a panel. Thus, Hunter's teaching of stabilizing air remains relevant.

2b) Absent unattainable complete evacuation, air remains in a panel. Thus, Hunter's teaching of stabilizing air remains relevant.

Moreover, as unattainable complete evacuation is neither claimed nor found in the prior art, discussion of unattainable complete evacuation is moot to the claims and cited references.

3a and 3b) Appropriate weight is given to the opinion evidence. However, no factual evidence has been made of record showing that the spacer beads of Benson would likely break in bending and that the sheet would fail below the minimum thickness.

4a) Appropriate weight is given to the opinion evidence. However, no factual evidence has been made of record showing that only one of Hunter's embodiments is bendable.

Moreover, as the foam is incorporated into Benson's structure, Hunter's complete embodiment's bending performance is moot.

Moreover, as Benson teaches foam that bends (as placed between the vacuum elements), Benson would be relied upon to teach a bendable form of foam.

4b) Appropriate weight is given to the opinion evidence. However, no factual evidence has been made of record showing that flexible foam would compress within Hunter's panels to failure under all degrees of pressure with all degrees of flexibility.

Moreover, as the foam is incorporated into Benson's structure, Hunter's elements 18 and 19 would be unnecessary, which would make their impact and performance moot.

Moreover, as flexibility is a property of all structures, the foam of Hunter would have some degree of flexibility, whether minimal or of large magnitude.

4c) Since Späth does not require a hollow structure, it would not be limited to any particular thickness not found in the specification. Since Späth is relied upon for teaching how to bend rather than formation of the profiles being bent, the profile formation, prior to bending, would be moot as to how Späth, as combined, is relied upon.

In view of the foregoing, when all of the evidence is considered, the totality of the rebuttal evidence of nonobviousness fails to outweigh the evidence of obviousness.

Applicant's arguments filed 07 August 2006 have been fully considered but they are not persuasive.

Applicant argues with respect to the 35 USC 103(a) rejections. Applicant's arguments appear to be on the grounds that:

1) Factual evidence provided by Mr. Manini in the declaration rebuts the rejection.

The Applicant's arguments are addressed as follows:

1) The indications of the declaration are addressed as described above with the totality of the rebuttal evidence of nonobviousness fails to outweigh the evidence of obviousness.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick Butler whose telephone number is (571) 272-8517. The examiner can normally be reached on Mo.-Th. 7:30 a.m. - 5 p.m. and alternating Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Johnson can be reached on (571) 272-1176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


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8/21/04